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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/871,976	06/04/2001	Akihiko Hosono	401225	3480

7590 01/30/2004

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EXAMINER

TRAN, THANH Y

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 01/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/871,976

Applicant(s)

HOSONO ET AL.

Examiner

Thanh Y. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 9 and 13-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 9, 13 and 14 is/are allowed.
- 6) ☒ Claim(s) 1 and 15-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 12.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 and 15-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Choi et al (U.S. 6,504,292).

With respect to claim 1, Choi et al discloses a structure including a carbon body (5, Fig. 3B) comprising: a substrate (2); and a single phase body of carbon disposed on the substrate (see metal film coating 5, col. 5, lines 9-11) and having a plurality of continuously connect intersecting walls (see the intersecting walls of body 5 as shown in figure 3B) transverse to the substrate (2).

With respect to claim 15, Choi et al discloses an electric field emission electron source (Fig. 3B) including: a substrate (2); and a single phase body of carbon [see Fig. 3B and a single phase body (element 5) as indicated in figure 3C] on the substrate (2) as an electron emitting member for emitting electrons (see col. 5, lines 28-58), the single phase body of carbon comprising a plurality of continuously connected intersecting walls (see the intersecting walls of body 5 as shown in figure 3B) transverse to the substrate (2).

With respect to claim 16, Choi et al discloses an electric field emission electron source (Fig. 3B), wherein the continuously connected intersecting walls define perimeters of openings between locations where the continuously connected intersecting walls intersect.

With respect to claim 17, Choi et al discloses an electric field emission electron source (Fig. 3B) including a cathode electrode ("emitter") (see emitting tips 3 as indicated in figure 3A) for supplying electrons to the body of carbon (5) (see col. 5, lines 1-57), and an extraction electrode ("electron-extracting grid" or "gate") for generating an electric field for inducing emission of electrons from the body of carbon (see col. 1, lines 18-30 and col. 5, lines 35-58), wherein the body of carbon (5) is positioned opposite the cathode electrode (3), contacting the cathode electrode (3), and the extraction electrode is positioned opposite the body of carbon (5) without overlapping the body of carbon, when viewed in a direction transverse to the substrate (2).

With respect to claim 18, Choi et al discloses an electric field emission electron source (Fig. 3B) including a cathode electrode ("emitter") (see emitting tips 3 as indicated in figure 3A) for supplying electrons to the body of carbon (5) (see col. 5, lines 1-57), and a backside extraction electrode ("electron-extracting grid" or "gate"), positioned at a rear side of the body of carbon, for generating, from the rear side of body of carbon, an electric field for inducing emission of electrons from the body of carbon (see col. 1, lines 18-30 and col. 5, lines 35-58), wherein the body of carbon (5) is positioned opposite the backside extraction electrode, and the body of carbon (5) is positioned opposite the cathode electrode (3), contacting the cathode electrode. It should be noted that: since the backside extraction electrode ("electron-extracting grid" or "gate") is separated from the cathode electrode surface (emitter surface 3) by a small

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gap, it is considered that the body of carbon (5) is positioned opposite the backside extraction electrode ("electron-extracting grid" or "gate") (see col. 5, lines 35-58).

With respect to claim 19, Choi et al discloses an electric field emission electron source (Fig. 3B), wherein the cathode electrode (3) is located only at a periphery of the body of carbon (5).

With respect to claim 20, Choi et al discloses an electric field emission electron source (Fig. 3B), wherein the cathode electrode (3) is positioned outside the backside extraction electrode ("electron-extracting grid" or "gate") and not overlapping with the backside extraction electrode, when viewed in a direction perpendicular to the substrate. It should be noted that: since the backside extraction electrode ("electron-extracting grid" or "gate") is separated from the cathode electrode surface (emitter surface 3) by a small gap, it is considered that the cathode electrode (3) is positioned outside the backside extraction electrode ("electron-extracting grid" or "gate") and not overlapping with the backside extraction electrode (see col. 5, lines 35-58).

Allowable Subject Matter

3. Claims 9 and 13-14 are allowed.
4. The following is an examiner's statement of reasons for allowance: The following is a statement of reasons for the indication of allowable subject matter: claim 9 recites, inter alia, "generating a plasma in a mixture of gases contacting a gaseous carbon compound and hydrogen in a concentration range from 25% to 75%; applying a magnetic field and microwaves to the plasma to establish a resonance condition for electrons in the plasma; and forming body of carbon on the surface of substrate, the body of carbon having a plurality of continuously

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connected intersecting walls transverse to the surface of the substrate". The art of record does not disclose the above limitations, nor would it be obvious to modify the art of record so as to include the above limitations.

Barton et al (U.S. 6,403,209), Choi et al (U.S. 6,504,292) and Brown et al (U.S. 6,340,822) do not teach the above-mentioned limitations.

Conclusion

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh Y. Tran whose telephone number is (571) 272-2110. The examiner can normally be reached on Monday through Thursday and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo, can be reached on (571) 272-1957. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3431.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

TYT


EVAN PERT
PRIMARY EXAMINER